

CLAIMS

1. A speaker apparatus, comprising:
a primary coil disposed in the vicinity of a
gap of a magnetic circuit and to which a current
corresponding to an input audio signal is supplied;
a secondary coil, disposed in the gap, for
inducing a current corresponding to a current that
flows in said primary coil; and
a vibrating plate vibrated by said secondary
coil with an interaction of the current induced by said
secondary coil and a magnetic flux in the gap,
wherein the following formula is satisfied
$$N \times (R1 \times R2)^{1/2} / (2 \pi \times L1 \times (1 - k^2)^{1/2}) \geq 20000$$

where $R1$ is the DC resistance of said primary coil; $L1$
is the inductance of said primary coil; N is the number
of turns of said primary coil; $R2$ is the DC resistance
of said secondary coil; and k is the coupling
coefficient of said primary coil and said secondary
coil.

2. The speaker apparatus as set forth in claim
1,
wherein the individual constants $R1$, $L1$, N ,
 $R2$, and k satisfy the following formula at a frequency
 f in a desired reproduction frequency band
$$2 \pi \times f \times L12 \times (N2 \times R2 + R1) / (N2 \times X^{1/2}) \geq 0.3$$

210

$$X = (2 \pi \times f) 2 \times (L_1 \times R_2 + L_1 \times R_1 / N_2) 2$$
$$+ \{-R_1 \times R_2 + (2\pi \times f) 2 \times L_1 L_2 \times (1 - k_2) / n$$

25} 2

3. A speaker apparatus, comprising:

5 a primary coil disposed in the vicinity of a gap of a magnetic circuit and to which a current corresponding to an input audio signal is supplied;

160 a secondary coil, disposed in the gap, for inducing a current corresponding to a current that flows in said primary coil; and

225 a vibrating plate vibrated by said secondary coil with an interaction of the current induced by said secondary coil and a magnetic flux in the gap,

240 wherein the following relation is satisfied

245
$$L_1 / L_2 = R_1 / R_2$$

260 where R_1 is the DC resistance of said primary coil; L_1 is the inductance of said primary coil; R_2 is the DC resistance of said secondary coil; and L_2 is the inductance of said secondary coil.

275 4. The speaker apparatus as set forth in claim
3,

290 wherein when the coupling coefficient of said primary coil and said secondary coil is equal to 1, the square of the number of turns of said primary coil is equal to the ratio of the DC resistance R_1 of said primary coil and the DC resistance R_2 of said secondary coil.